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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/373,272 08/12/99 AUSTIN-PHILLIPS S 09820.114

HM22/0605
INTELLECTUAL PROPERTY DEPARTMENT
DEWITT ROSS & STEVENS SC
FIRSTAR FINANCIAL CENTRE
8000 EXCELSIOR DRIVE SUITE 401
MADISON WI 53717-1914

EXAMINER

ART UNIT	PAPER NUMBER
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1635
DATE MAILED:

06/05/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/373,272

Applicant(s)

AUSTIN-PHILLIPS ET AL.

Examiner

Janet L Epps

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 March 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16-22 and 26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 16-22 and 26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other:

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DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Response to Amendment

2. Applicant's attention is directed to the "MARKED UP" version of the claims as amended on 3-26-01, page 10 of the response. The first line of claim 16 recites the term "tabacco," this term is spelled incorrectly, the correct term was likely intended to be "tobacco."

Response to Arguments

3. Claims 16-18, 21-22, and 25-26 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Van Ooyen et al. in view of Virki et al. (WO 9320714), Henrissat et al., and Willmitzer et al. (PTO-1449)

Applicant's arguments filed 3-26-01 have been fully considered but they are not persuasive. Applicants traverse on the grounds that the Van Ooyen et al. reference "does not describe or suggest how to transform a tobacco or alfalfa plant to express any of the enzymes recited in claim 16." Contrary to Applicant's assertions, the Van Ooyen et al. reference clearly describes a binary vector system expressing a plant polysaccharide-degrading enzyme for use in the transformation of tobacco. Applicants have not supplied any rationale regarding why the system disclosed in Van Ooyen et al. would not be useful in the expression of other functionally equivalent plant polysaccharide-degrading enzymes that are known in the art, namely *A. cellulolyticus* endoglucanase E1 or *T. reesei* CBH I, or *T. fusca* cellulase E2, *T. fusca* cellulase E3.

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Additionally, the disclosure of Van Ooyen clearly provides guidance and motivation for expressing polysaccharide degrading enzymes in the alfalfa plant as well (col. 5, line 56; col. 7, lines 27-43).

Furthermore, Applicants argue that the Van Ooyen et al. reference is "totally silent regarding concentrating the cellulose-degrading produced in the host plant," therefore this reference can not anticipate claim 22. Although, the reference does not expressly state "a method of concentrating," the Van Ooyen et al. reference clearly teach a method of extracting the polysaccharide degrading enzymes from plants which can be considered a method of concentrating the material (col. 12-13 bridging paragraph).

Moreover, in response to application of the Vikri et al., Willmitzer et al. and Henrissat et al. references to support the Van Ooyen et al. reference in this rejection under 35 USC 103(a), Applicants traverse on the grounds that neither Vikri et al., Willmitzer et al., nor the Henrissat et al. references provide any teachings regarding the expression of the enzymes of the instant invention in either tobacco or alfalfa plants. Applicants further argue that the three supporting references "fails to enable the production of a transformed alfalfa or tobacco plant as recited in claim 16." Contrary to Applicant's assertions, it is not necessary for the supporting references to provide enablement for the transformation of alfalfa or tobacco plants, the prior art clearly teaches the transformation of these two plant systems. Additionally, as a point of general knowledge, the first system designed to transform plants (namely the *Agrobacterium tumefaciens* system) was based upon the transformation of the tobacco

plant. The supporting references are provided to demonstrate that the specific enzymes claimed by Applicant are well known in the art (as admitted by Applicants see page 3 of the specification as filed), and further that there is a clear industrial motivation for synthesizing transgenic tobacco or alfalfa plants expressing plant polysaccharide degrading enzymes specifically for ensilage purposes. Applicant's arguments are not persuasive.

Claim Rejections - 35 USC § 103

4. Claims 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Ooyen et al. in view of Henrissat as applied to the above claims, and further in view of Shiyaron et al. (GenBank Accession No. E00389) and Thomas et al.

Claims 19-20 recite a genetically recombinant tobacco or alfalfa plant, which is stably transformed to contain and express a gene sequence selected from the group consisting of SEQ ID NO:9 (encodes the CBH I gene isolated from *T. reesei*) or SEQ ID NO:8 (encodes the endoglucanase E1 isolated from *Acidothormus cellulolyticus*.)

Although the above references do not recite these specific sequences, clearly at least the cellobiohydrolase I (CBHI) gene isolated from *T. reesei* is disclosed in the Henrissat et al. reference. Additionally, the sequence listing recites that SEQ ID NO:9 (EC 3.2.1.91) corresponds to GenBank Accession No. E00389. According to Genbank this sequence was disclosed in the Shiyaron et al. JP 1985149387 Patent that has a publication date of 06 August 1985. Clearly, this sequence was known in the prior art at the time of filing of the instant application. Thomas et al. disclose the sequence of the

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gene encoding *Acidothermus cellulolyticus* E1 endoglucanase , see Figure 1 (EC 3.2.1.4; SEQ ID NO:8).

Therefore, it would have been obvious at the time of filing of the instant application to modify the teachings of Van Ooyen et al. in view of Henrissat et al. as applied above with the teachings of Shiyaron et al. and Thomas et al. to design the genetically recombinant plants of the instant invention expressing either SEQ ID NO: 8 or 9. It would have been obvious because the Van Ooyen et al. reference clearly disclose methods of synthesizing genetically recombinant tobacco and alfalfa plants expressing plant polysaccharide degrading enzymes such as those according to EC 3.2.1.4, and EC 3.2.1.91 (col. 4, lines 25-35), and the Henrissat et al., Thomas et al. reference and Shiyaron et al. references disclose enzymes having the same activity as those enzymes disclosed as functional in the invention of Van Ooyen et al. One of ordinary skill in the art would have been motivated to modify the method of Van Ooyen et al. with the enzymes of Henrissat et al., Shiyaron et al. and Thomas et al. since they disclose functionally equivalent enzymes that are disclosed as having the same enzyme classification as the enzymes used in the Van Ooyen et al. reference.

Therefore, the invention as a whole would have been *prima facie* obvious over Van Ooyen et al. in view of Henrissat as applied to the above claims, and further in view of Shiyaron et al. and Thomas et al.

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5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janet L Epps whose telephone number is 703-308-8883. The examiner can normally be reached on Mondays through Friday, 9:00AM to 6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John LeGuyader can be reached on (703)-308-0447. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3014 for regular communications and 703-305-7939 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0196.

Janet Lee Epps
Patent Examiner
June 2, 2001



JOHN L. LEGUYADER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600